

Heindel and Noyes

P.O. Box 64709 Burlington, Vermont 05406-4709

- Consulting Hydrogeologists
- Engineers
- Environmental Scientists

802-658-0820

Fax 802-860-1014

July 25, 1997

Mr. Chuck Schwer
Sites Management Section
Hazardous Materials Management Division
Agency of Natural Resources
103 South Main Street
Waterbury, VT 05671-0404

Re: Golden Eagle Resort
Leaking Underground Storage Tank Investigation
Stowe, Vermont

Dear Chuck:

Enclosed for your review are the results of our subsurface investigation of a leaking underground storage tank at Golden Eagle Resort in Stowe, Vermont. The site was found to be in violation of the State Ground Water Protection Rules for Benzene concentrations in monitor well MW-1. Based on elevated TPH levels in MW-1, H&N returned to the site to test for the presence of free phase product. An interface probe was used to detect and measure the amount of free product in well MW-1, nearest the UST. Immediate remediation measures were taken and free product was bailed from the well. Subsequent weekly visits show a significant decrease in the presence of free product in MW-1. H&N will continue to measure and bail out the amount of free product present in MW-1 until levels reach 0.01 feet or less, or until advised otherwise by the SMS.

If you have any questions or comments on this information, please contact me or Jeff Noyes.

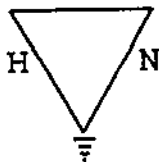
Sincerely,

Dori Barton
Staff Scientist

Enclosure

cc: Neil Van Dyke

U:DBARTON GOLDEN SCHWER.NLI



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GOLDEN EAGLE RESORT

Box 1090, RT 108/ Mountain Road
Stowe, Vermont

LEAKING UNDERGROUND STORAGE TANK INVESTIGATION

Prepared for: The Golden Eagle Resort

Prepared by:

Heindel & Noyes

July 25, 1997

MADE
JUL 30 9 56 AM '97

Golden Eagle Resort
Box 1090, RT 108/ Mountain Road
Stowe, Vermont

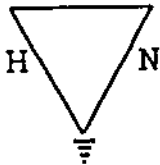
**LEAKING UNDERGROUND STORAGE TANK
INVESTIGATION**

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Golden Eagle Resort
Box 1090, RT 108/ Mountain Road
Stowe, Vermont

LEAKING UNDERGROUND STORAGE TANK INVESTIGATION

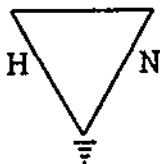
EXECUTIVE SUMMARY

Heindel and Noyes (H&N) has completed an investigation of a former 3,000 gallon heating oil underground storage tank (UST) at the Golden Eagle Resort located on the Mountain Road in Stowe, Vermont, approximately 0.6 miles northwest of the Village of Stowe. The investigation included a soil boring/monitoring well installation program, laboratory analysis of groundwater samples, and a well survey. The investigation was designed to define the nature and extent of potential soil and groundwater contamination associated with a leaking UST. An overview of the results of this investigation is presented below.

- The 3,000 gallon UST was removed and assessed by Ground Water of Vermont on November 13, 1996. Approximately 600 gallons of heating-oil was removed from the tank prior to excavation. The UST was reported to be in very poor condition upon removal, with several holes and significant pitting. Soils from beneath the tank exhibited a slight petroleum sheen with a strong petroleum odor. See report included in Appendix 2, pages 1-5.
- Four monitoring wells, ranging from 12 to 23 feet deep, were installed in the area adjacent to and down gradient of the old UST site. Soil samples were collected at two foot intervals and screened with a PID in the field. VOC headspace concentrations ranged from 0.2 to 1500 part per million (ppm).
- Groundwater samples were collected and submitted for laboratory characterization by EPA Method 602 and modified 8100. The samples from the monitoring well closest to the UST site (MW1), had elevated levels of Benzene (13.9 ug/L), Ethylbenzene (23.0 ug/L), Toluene (29.1 ug/L), and Xylenes (103.0 ug/L). Total Petroleum Hydrocarbons (TPH) were also measured and ranged between 1.46mg/L and 6.70mg/L for three of the four monitoring wells.
- Free phase product has been detected in monitor MW-1 in a thickness of 1.84 feet. Bi-weekly site visits were made to measure and bail free product from the monitor well. Product levels have dropped significantly between visits, to 0.2 feet. A bi-

monthly site visit schedule is currently being followed. Product bailed from the well is disposed of according to hazardous waste disposal protocol.

- A limited sensitive receptor survey during UST removal of the ambient air inside lower-level rooms of the St. Moritz and Matterhorn suites (the nearest downgradient building) did not reveal PID readings above background conditions and no petroleum odors were noted during the inspection. A subsequent survey by H&N did not reveal PID readings above background conditions. The nearest private water supply well is located at a distance of 1500 feet from the UST and is not likely to be impacted, as the contamination has not migrated to monitoring well MW-4, approximately 175 feet downgradient of the UST. A groundwater elevation survey shows that the nearby surface water pond is located upgradient from the former UST and is not likely to be affected.
- In view of the elevated benzene levels and presence of free phase product, H&N recommends:
 1. Additional groundwater samples should be obtained from each of the 4 monitoring wells.
 2. A brief letter report will be submitted detailing additional information gained from the work above.
 3. Product recovery and measurement should continue. At this time, site visits are occurring on a bi-monthly basis.
- Surface water samples should be taken from the pond upgradient from the former UST, and from the downgradient stream at a distance of 200 ft. Surface water and groundwater samples should be analyzed by EPA 602 for volatile organic compounds, and modified 8100 for total petroleum hydrocarbons.



Heindel and Noyes

P.O. Box 64709 Burlington, Vermont 05406-4709

- Consulting Hydrogeologists
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802-658-0820

Fax 802-860-1014

Golden Eagle Resort Box 1090, RT 108/ Mountain Road Stowe, Vermont

LEAKING UNDERGROUND STORAGE TANK INVESTIGATION

1.0 INTRODUCTION

1.1 Historical Perspective

In November of 1996, Golden Eagle Resort contracted Ground Water of Vermont to remove a 3,000 gallon heating oil underground storage tank (UST) from the Golden Eagle Resort property located on Rt. 108/ Mountain Road in Stowe, Vermont. Evidence of soil and potentially groundwater contamination was identified in the area immediately surrounding the UST.

The Sites Management Section (SMS) determined that additional work was necessary to define the nature and extent of contamination associated with the UST. Subsequently, the Golden Eagle Resort retained Heindel and Noyes (H&N) to complete a work plan and cost estimate for the additional site characterization. The SMS approved the work plan on February 27, 1997. The investigation was conducted on April 17, 1997.

1.2 Purpose and Scope

The objectives of the investigation, as outlined in the February 25, 1997 work plan approved by the SMS, included further characterization of the nature and extent of soil and groundwater contamination. This report documents, to the extent known, the history of the UST, and presents the results of the subsurface investigation. Conclusions and recommendations are presented in the final section.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 Site Location and Physiography

The Golden Eagle Resort (Resort) property is located on the Mountain Road in Stowe, Vermont. The Resort property encompasses some 80 acres in a commercial area containing small retail businesses and private residences. The primary commercial development of the resort is on 21 acres. The property is occupied by a motel including 92 guest rooms, a health spa and a restaurant. The Resort is bordered to the south by forest and to the north by Route 108. See site map included in Appendix 1, page 1.

The site and vicinity are gently sloped to the northeast. The Soil Conservation Survey for Lamoille County identifies soils in the Resort area as the Boothbay silt loam association. These soils are deep, moderately well drained, and sloping. Typically this soil has a surface layer of dark grayish brown silt loam 10 inches thick. The subsoil is olive, mottled silt loam 20 inches thick. The substratum is olive, mottled silt loam that extends to a depth of 60 inches or more. The surficial geology of the site is characterized by Kame terraces and glacio-fluvial deposits of sands and gravels. Site-specific soil characteristics are described in Section 4.0.

The Little River, located approximately one-half mile to the east, is the principal watercourse in the area. The West Branch of the Little River is located about 1,100 feet north of the site and flows east. The West Branch represents the regional groundwater discharge area. The general direction of groundwater flow at the site is to the northeast.

There are two primary surface water drainage routes on the site. Water flows from the forested area on the southeastern part of the property through two retention ponds. The lower pond, nearest the UST, discharges into a small stream that flows northeast to the Little River. Surface water also runs from the southwestern forested area in a northerly direction through a swale to route 108 and then west into a retention pond. See attached site plan included in Appendix 1, page 2.

2.2 Existing Potential Sources of Contamination

Potential environmental hazards in the Resort area are depicted on an attached map included in Appendix 1 (page 3). There are no known environmental threats immediately upgradient of the Golden Eagle property. The nearest potential source of contamination, located some 1700 feet southeast across Route 108, is the Stowe Solid Waste Facility. The Solid Waste Facility is downgradient from the Resort property and should pose no threat.

2.3 Underground Storage Tank History

The available information indicates that the 3,000 gallon No. 2 fuel oil UST was installed more than 30 years ago. The UST was removed on November 13, 1996. Ground Water of Vermont oversaw the excavation of the tank and performed the UST closure assessment. The tank pull report is included in Appendix 2 (pages 1 - 5).

As reported by Ground Water of Vermont, a 1,000 gallon coated single-walled 7 gauge steel UST was installed immediately after the removal of the 3,000 gallon tank on November 13, 1996. Prior to excavation, approximately 600 gallons of heating-oil was removed from the tank. The 3,000 gallon UST was found to be in very poor condition upon removal, with several holes and significant pitting. The piping leading from the tank to the boiler room was reportedly stained with petroleum, suggesting that leaks may have also occurred at the piping joints. It was concluded that the observed heating-oil release was due primarily to the holes located on the south end of the tank.

Soils in the area of the UST were screened for the presence of volatile organic compounds (VOCs) with an Hnu (Model PI 101) portable photoionization detector (PID). PID readings in the excavation ranged from 0.1 to over 100 ppm. Average PID readings were approximately 31 ppm VOCs. All soils excavated by Ground Water Vermont from the former UST location were backfilled.

PID screening by the consultant of the ambient air in the lower level of the nearest downgradient building did not indicate the presence of volatile petroleum compounds at the time of the UST removal. There have been no reports from

guests or resort staff of the presence of petroleum odors in the rooms near the former UST.

3.0 METHODS OF INVESTIGATION

The objective of the subsurface investigation was to define the nature and extent of contamination associated with the former 3,000 gallon heating-oil UST. The subsurface investigation included a monitoring well installation program. The monitoring wells were developed and sampled for laboratory characterization. Procedures employed during this subsurface investigation are described below.

3.1 Soil Boring Completion

A total of 4 soil borings were completed using a hollow-stem auger drilling rig in the vicinity of the UST to define the nature and extent of soil contamination associated with the UST. The boring locations are illustrated on the site plan included in Appendix 1, page 2. The borings ranged in depth from approximately 12 to 23 feet bgs.

Soils were logged from the ground surface to the total depth of each boring. Composite soil samples were typically collected from 2 foot split spoon samples. The headspace of each sample was tested with a photoionization detector (PID) equipped with a 10.2 eV lamp. The PID was calibrated at the beginning of the day, with a 100 ppm isobutylene span gas, to a benzene reference. Soil boring logs are included in Appendix 2 (pages 6-14). Soil screening results are discussed in Section 4.1.

3.2 Monitoring Well Installation and Sampling

The four soil borings were advanced into the water table to evaluate the extent of soil contamination in the deeper subsurface and to install groundwater monitoring wells. The monitoring well locations are depicted on the site plan in Appendix 1 (page 2). Monitoring wells are constructed of 2" (i.d.) PVC casing with flush-threaded joints and a 10-15 foot, factory slotted screened section (0.010" slot). The screened section was covered with a filter sock, and the borehole around the screen was filled with native soil. The wells are finished flush with grade and curb

boxes. Monitoring well construction diagrams are included in Appendix 2 (pages 6-14).

The monitoring wells were developed after installation by bailing approximately 10² well volumes. The wells were then sampled for laboratory analysis with disposable bailers. Two 40 mL vials were collected from each well. The samples were preserved with sodium azide and stored on ice until delivered to the laboratory. The groundwater samples were collected on April 15, 1997 and submitted for VOC analysis by EPA Method 602. The groundwater analytical data is discussed in Section 4.2 of this report.

The wells were surveyed and the water table elevation data is incorporated in a map included in Appendix I, page 4. The groundwater flow direction is generally to the northeast towards the West Branch River, the regional discharge point. There is a drainage swale located on the western edge of the site which flows north to Route 108 and then in a westerly direction into a retention pond. It would appear that the former UST is located on a knoll, with the groundwater flow radiating to the northeast and to the northwest. The surface water elevation of the pond is higher than the surrounding groundwater table. The pond is a direct recharge influence to the groundwater system and does not represent a discharge point.

4.0 CONTAMINANT DISTRIBUTION

The contaminant distribution in soil, and groundwater is discussed below.

4.1 Soil

During the soil boring program split-spoon soil samples were typically collected at two foot intervals. In general, the soil consisted of brown, medium to fine grained sand with varying percentages of silt. Surficial geology dominated by glacial fluvial deposits would be characterized by a similar soil composition. Results of field testing of soils using a photoionization detector are included in the soil boring logs (Appendix 2, pages 6-14). The field screening results are compiled below.

SOIL SCREENING RESULTS			
Boring Location	Depth Range	PID Response Range (ppm)	Comments
MW-1	5-9'	.6	
MW-1	9-11'	1500	
MW-1	11-12'	720	
MW-1	12-13'	1400	
MW-1	13-14.5'	320	
MW-1	14.5-17'	3.0-32	
MW-1	17-23'	.2-.8	Water table
MW-2	5-7'	.4	Water table
MW-3	10-12'	.2	
MW-4	1-8'	.2	
MW-4	10-12'	.2	
MW-4	12-14'	3.0	
MW-4	14-16'	3.2	
MW-4	16-18'	NA	Water Table

PID responses vary from 0.2 to 1500 ppm. The field screening results suggest that releases from the UST (leaks, spills) have contaminated soils in the UST vicinity.

4.3 Groundwater

The four monitoring wells were installed in the UST vicinity to evaluate groundwater quality. The wells were sampled for laboratory characterization by EPA Method 602. Laboratory analytical reports are presented in Appendix 3 (pages 1- 6). The analytical data are compiled below.

GROUNDWATER ANALYTICAL RESULTS				
Compound	Concentration ($\mu\text{g/L}$)			
	MW-1	MW-2	MW-3	MW-4
Benzene	13.9	<1*	<5	<1
Chlorobenzene	<1	<1	<5	<1
1,2-Dichlorobenzene	<1	<1	<5	<1
1,3-Dichlorobenzene	<1	<1	<5	<1
1,4-Dichlorobenzene	<1	<1	<5	<1
Ethylbenzene	23.0	<1	<5	<1
Toluene	29.1	<1	<5	<1
Xylenes	103.0	<1	<5	<1
MTBE	<10	<1	<50	<10

* < indicates method detection limit.

Total Petroleum Hydrocarbons (TPH) By Modified EPA Method 8100

Well ID	Concentration (mg/L)*
MW-1	6.70
MW-2	1.46
MW-3	2.80
MW-4	ND (None detected)

* Method detection limit is 0.8 mg/L

EPA Method 602 target compounds and non-target analytes were present in the samples. Benzene in monitoring well MW-1 is violation of the State of Vermont Ground Water Protection Rules. The Benzene and TPH concentrations indicate that fuel releases from the UST have had an impact on groundwater quality in the area.

Based on the elevated TPH levels in monitor well MW-1, H&N returned to the site on June 13, 1997 to test for the presence of free phase product. An interface probe was used to detect and measure the amount of free product in well MW-1, nearest the former UST. On June 13, 1997 H&N measured 1.84 feet of free product in MW-1. No free product was observed in MW-3 although it has significant levels of dissolved phase contamination. Immediate remediation measures were taken and free product was bailed from MW-1. Subsequent weekly visits show a significant decrease in the presence of free product. Free product measurements on June 16, June 20 and June 27 were 0.6, 0.3 and 0.2 feet, respectively. H&N will continue to measure and bail out the amount of free product present in MW-1 until advised otherwise by the SMS. At this time, monitoring frequency has been decreased to bi-monthly based on the diminishing quantity of free product present.

A walking survey revealed the existence of a drainage swale and groundwater discharge area upgradient of monitor well MW-3, and a surface water stream downgradient from monitor well MW-3. H&N recommends surface water sampling of the pond, and the stream downgradient from MW-3.

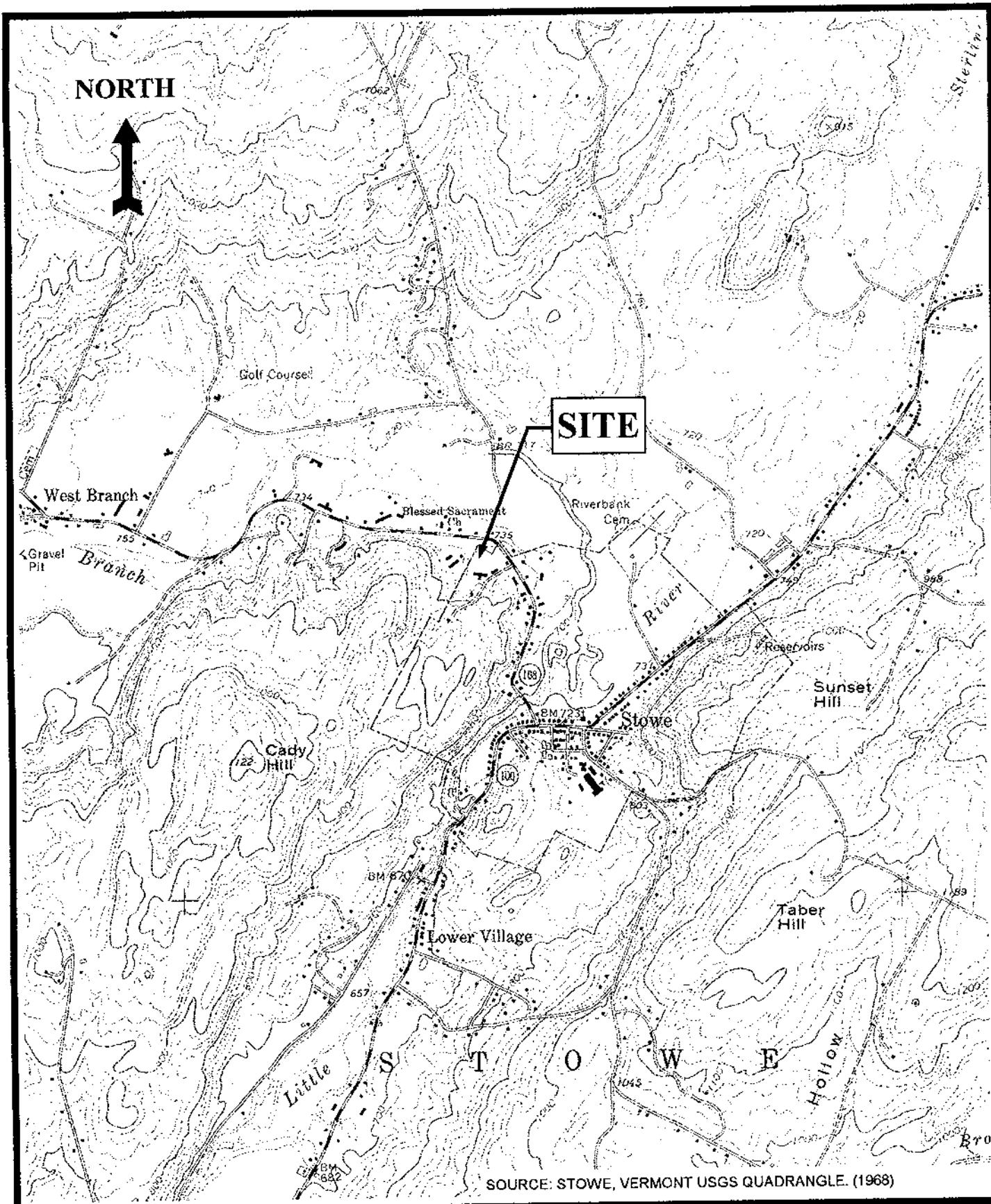
5.0 RECEPTOR SURVEY

A limited sensitive receptor survey during UST removal of the ambient air inside lower-level rooms of the St. Moritz and Matterhorn suites (the nearest downgradient building) did not reveal PID readings above background conditions and no petroleum odors were noted during the inspection. A subsequent survey by H&N did not reveal PID readings above background conditions. The nearest private water supply well is located at a distance of 1500 feet from the UST and is not likely to be impacted, as the contamination has not migrated to monitoring well MW-4, approximately 175 feet downgradient of the UST. A groundwater elevation survey shows that the nearby surface water pond is located upgradient from the former UST and is not likely to be affected.

6.0 CONCLUSIONS AND RECOMMENDATIONS

H&N has completed an investigation of the UST site at the Golden Eagle Resort property in Stowe, Vermont. The investigation included a subsurface sampling and testing program. Conclusions and recommendations are presented below.

1. Four groundwater monitoring wells were installed in the UST vicinity. VOC contamination was observed in the interface zone (capillary fringe-water table) during installation. EPA Method 602 target analytes and unidentified compounds were detected in the groundwater samples.
2. The levels of contamination observed in soil (PID readings: 0.2 to 1500 ppm), and groundwater (Benzene: 13.9 ug/L; TPH: 1.46 to 6.70 mg/L) are consistent with significant fuel oil contamination of the subsurface.
3. Based on the elevated TPH levels in monitor well MW-1, H&N returned to the site to test for the presence of free phase product. An interface probe was used to detect and measure the amount of free product in well MW-1, nearest the UST. Immediate remediation measures were taken and free product was bailed from the well. Subsequent weekly visits show a significant decrease in the presence of free product in MW-1. H&N will continue to measure and bail out the amount of free product present in MW-1 until levels reach 0.01 feet or less, or until advised otherwise by the SMS.
4. The results of the investigation indicate the contamination may pose a threat to ambient indoor air and groundwater receptors. The site is in violation of the State Ground Water Protection Rules for Benzene concentrations in well MW-1. H&N recommends that the Golden Eagle Resort implement a quarterly groundwater monitoring program to characterize the extent of the contamination of the area. The monitoring program would entail surface and groundwater sampling, water level and free phase product measurements. The Hazardous Materials Management Division's "Site Management Activity Completed" Classification Procedures will be met before monitoring activity is suspended.
5. In view of the elevated benzene levels and presence of free phase product, H&N recommends that the site be monitored on a quarterly basis. Monitoring parameters should include measurements of groundwater levels at each monitor well and potential presence of free phase product in MW-1 and MW-3. Surface water samples should be taken from the pond upgradient from the former UST, as well as from the downgradient stream at a distance of 200 ft. Surface water and groundwater samples should both be analyzed by modified EPA 602 for volatile organic compounds, and modified 8100 for total petroleum hydrocarbons.



GOLDEN EAGLE RESORT

STOWE,

VERMONT

SITE LOCATION MAP

SCALE: 1"=2000'

FILE: C:\GLDNEGLE\SITE\MAP

DATE: MAY 12, 1997

PROJECT NO. 96309

DRAWN BY: M. Luman

PROJ. MGR: D. Barton

APPROVED: J. Noyes

Heindel and Noyes

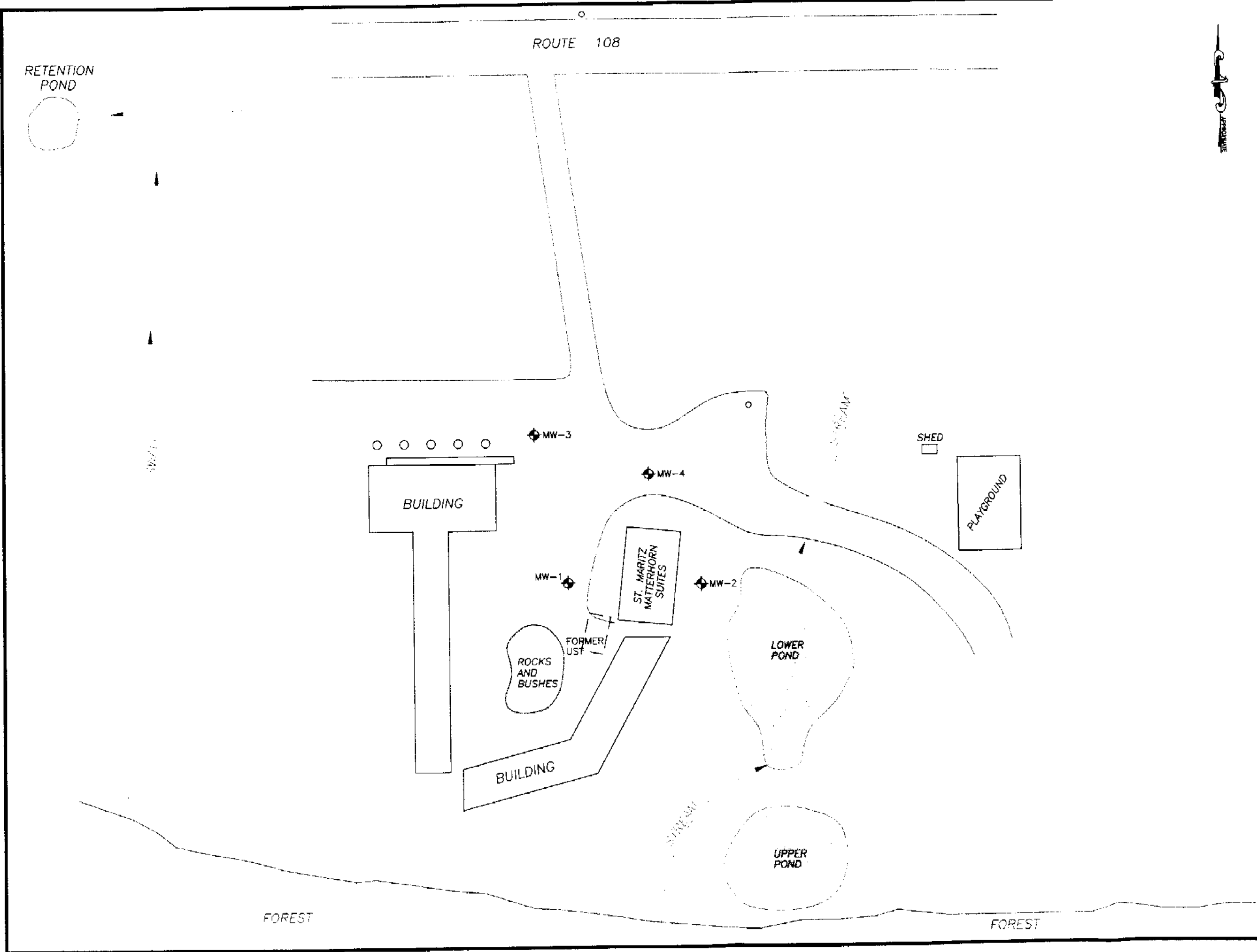


- Hydrogeology • Ecology •
- Environmental Engineering •

CONSULTING SCIENTISTS AND ENGINEERS

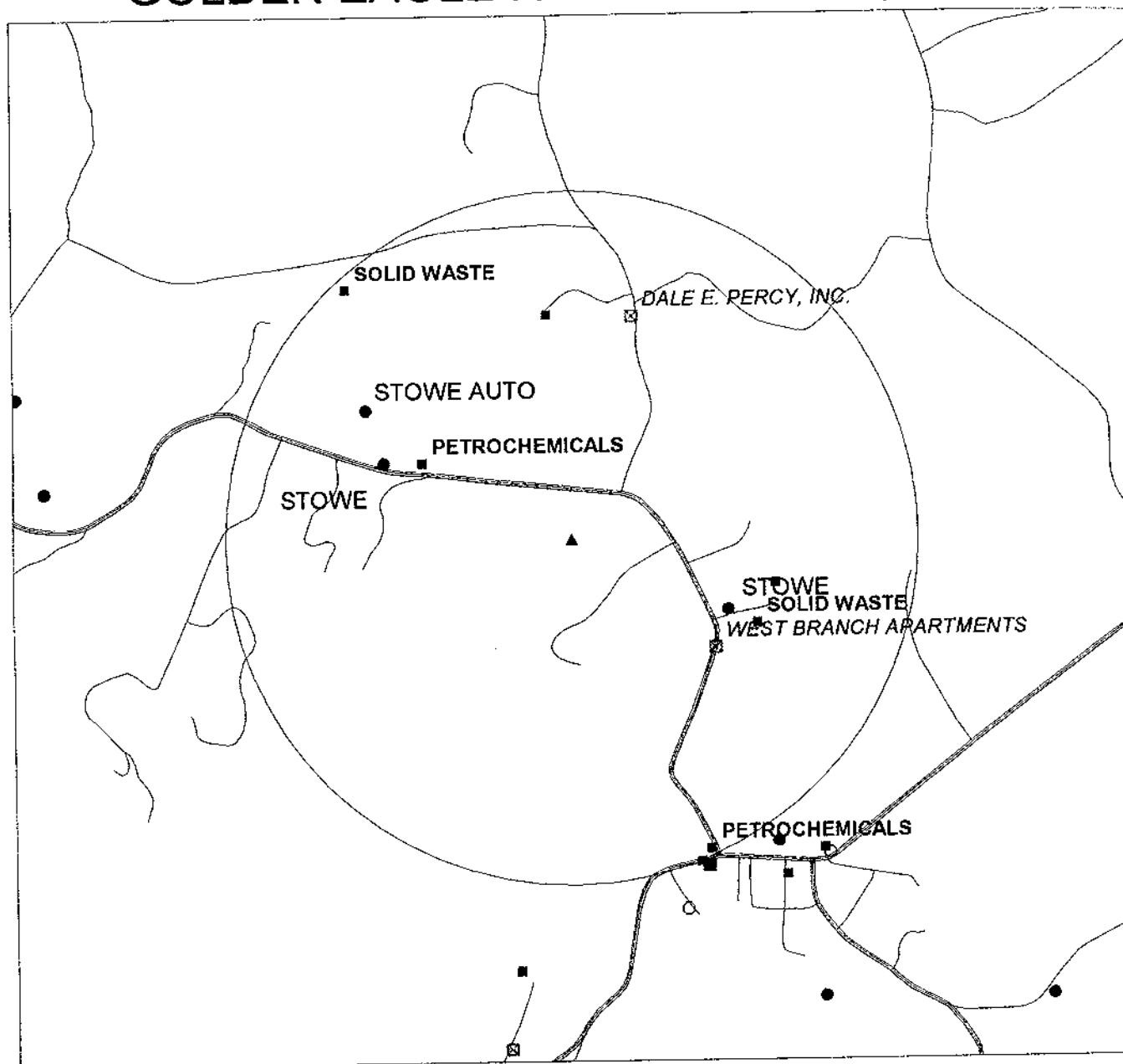
P.O. BOX 64709 - BURLINGTON, VERMONT 05406

PREPARED BY: INFORMATION & VISUALIZATION SERVICES



GOLDEN EAGLE RESORT		DATE: JULY 2, 1997	
STOWE, VERMONT		PROJECT NO. 96309	
SITE PLAN		DRAWN BY: C. Hardy	
		PROJ. MGR: D. Barton	
		APPROVED: J. Noyes	
SCALE: 1"=50'		FILE: C:\GOLDEN\GOLDEN	
		<input type="checkbox"/> DRAFT <input type="checkbox"/> FINAL	
		Heindel and Noyes • Hydrogeology • Ecology • • Environmental Engineering • CONSULTING SCIENTISTS AND ENGINEERS P.O. BOX 64709 BURLINGTON, VERMONT 05406-4709	
		Prepared By: Information & Visualization Services	

Environmental Hazards and Locations With Test Data Surrounding GOLDEN EAGLE RESORT - Stowe, Vermont



2000 0 2000 Feet

Circle Radius = 0.5(miles)

Map Center (state plane meters)
Easting: 137118
Northing: 219106



● STATE DESIGNATED HAZARDOUS WASTE SITE.
(Last updated 5/97, next update 10/97)

○ OLD STATE DESIGNATED HAZARDOUS WASTE SITE.
(No longer on the State HWS List as of 4/97)

□ UNDERGROUND STORAGE TANK
(On the 4-97 State UST List, all sites are not located)

◆ SITE SPECIFIC DATA AVAILABLE. (Last updated 5/97, next update 10/97)
NOT NECESSARILY INDICATIVE OF AN ENVIRONMENTAL HAZARD.

■ POTENTIAL SOURCE OF GROUNDWATER POLLUTION. (1980)
(E. LANDFILL, INDUSTRIAL WASTE, FARMING, SALT, JUNK YARD, ETC.)

NOTE
TEST DATA SITES INDICATE
INVESTIGATIONS OF AN ECOLOGICAL,
GEOLOGICAL, OR PLANNING NATURE
MOST FEATURES ACCURATE ± 15'

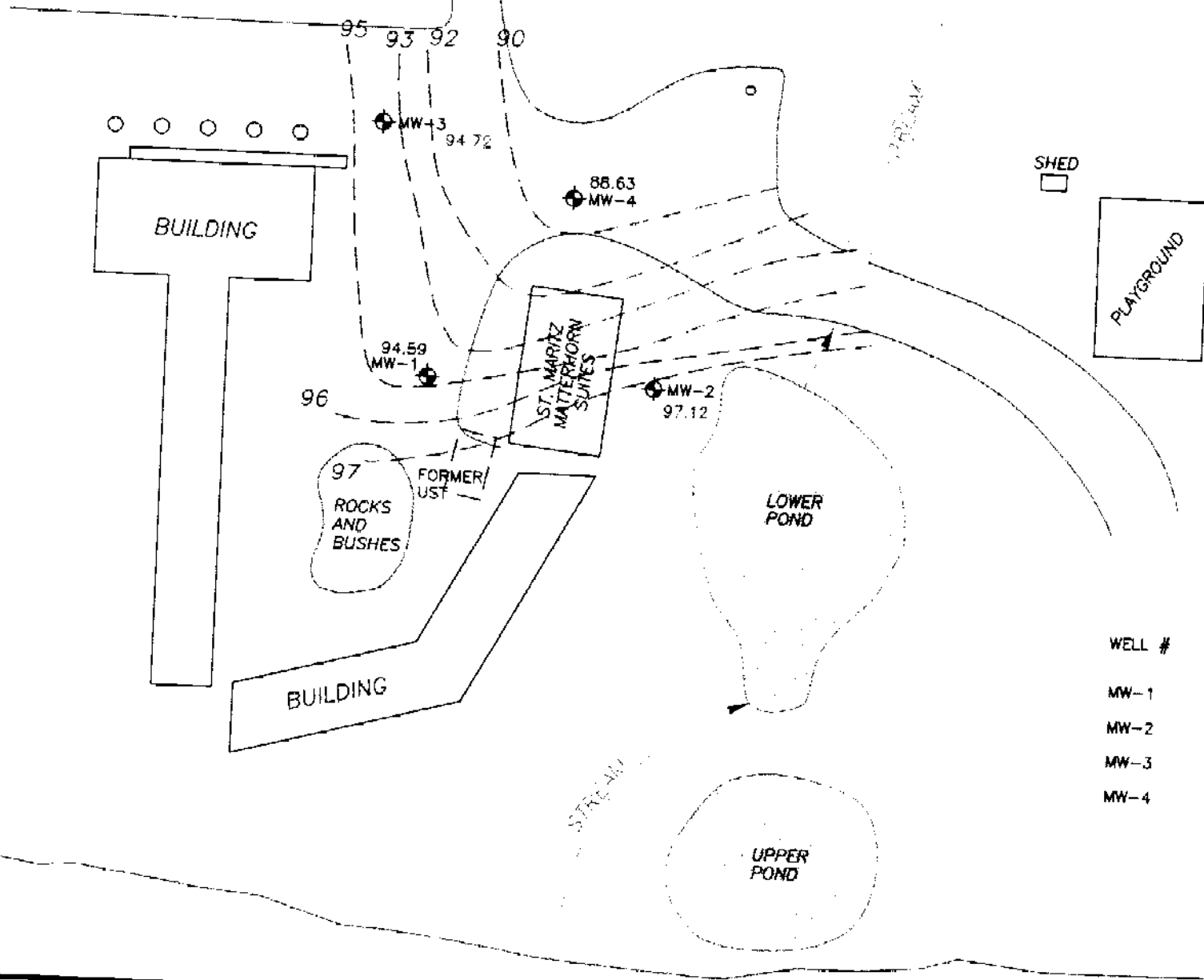


INFORMATION &
VISUALIZATION
SERVICES

P.O. Box 64709 - Burlington, Vermont - 05406-4709 - Tel: (802) 865-0437 - Fax: (802) 860-1014 - Email: TVSBURL@AOL.COM

RETENTION
POND

ROUTE 108



WELL #	T.O.P. ELEV. (FT)	WATER TABLE B.T.O.P.(FT)	WATER TABLE ELEV.(FT)
MW-1	109.58	14.99	94.59
MW-2	102.33	5.21	97.12
MW-3	104.60	9.88	94.72
MW-4	105.73	17.10	88.63

GOLDEN EAGLE RESORT

STOWE,

VERMONT

WATER TABLE CONTOUR MAP - 6/13/97

SCALE: 1"=50'

FILE: C:\GOLDEN\GOLDEN

DATE: JULY 2, 1997

PROJECT NO. 96309

DRAWN BY: C. Mandy

PROJ. MGR: S. Barton

APPROVED: J. Noyes

☐ DRAFT ☐ FINAL

Heindel and Noyes

• Hydrogeology • Ecology •
• Environmental Engineering •
CONSULTING SCIENTISTS AND ENGINEERS

P.O. BOX 64709
BURLINGTON, VERMONT 05406-4709

Prepared By:
Information & Visualization Services



— 3 December, 1996

— Mr. Tim McNamara
— Management and Prevention Section
— Vermont DEC
— 103 S. Main Street, West Building
— Waterbury, Vermont 05671-0404

RE: *UST Closure at Golden Eagle Resort, Stowe, Vermont*

Dear Mr. McNamara:

— On 13 November 1996, I inspected the removal of one 3,000-gallon heating-oil underground storage tank (UST) located at the Golden Eagle Resort on Route 108 in Stowe, Vermont. This letter is intended to clarify two concerns you had regarding the UST closure — type of replacement tank installed and status of soil excavated during the UST closure.

— The replacement tank is a 1,000-gallon single-walled seven-gauge steel tank. According to Mr. Art Meade of Sweet and Burt, the tank specifications were selected based on the intended use, which is solely for heating guest rooms at the resort.

— During the removal activities, soil from the UST excavation was separated into two piles based on photoionization detector (PID) screening, one for soils with PID readings less than 0.1 parts per million (ppm) and one with PID readings greater than 0.1 ppm. The soils with PID readings less than 0.1 ppm were from the upper four feet of the excavation which was located above the top of the UST. In order to make room to remove the UST from the ground and to conduct deeper exploration of the excavation, approximately 60 cubic yards of soil from the upper four feet of the excavation (all of which had PID readings of less than 0.1 ppm) were temporarily transported to the D.E Percy, Inc. property located on Weeks Hill Road in Stowe. At the time of the removal, Mr. Chip Percy of D.E Percy, Inc. indicated that the soil could be temporarily stored on the property but that he wanted all of the soil brought back to the Golden Eagle Resort property to be used as backfill. According to Mr. Cliff Randall, Maintenance Supervisor for the Golden Eagle Resort, all of the soil temporarily stockpiled on the D.E Percy, Inc. property was used for backfill in the original UST excavation.

— I trust the above information clarifies your concerns regarding the UST closure at the Golden Eagle Resort. Please call me if you have any other questions or concerns about this work.

— Sincerely,

— Robert J. Ross, CGWP
— Hydrogeologist

cc. Mr. Neil Van Dyke, Golden Eagle Resort

— REF: 96094L02.DOC



20 November 1996

Ms. Susan Thayer
Management and Prevention Section
Vermont Department of Environmental Conservation
103 S. Main Street, West Building
Waterbury, Vermont 05671-0404

RE: *UST Closure at Golden Eagle Resort, Stowe, Vermont*

Dear Ms. Thayer:

On 13 November 1996, I inspected the removal of one heating-oil underground storage tank (UST) located at the Golden Eagle Resort. The UST cleaning and purging were performed on the same day by Sweet and Burt of Morrisville, Vermont. D. E. Percy Excavating, Inc. of Stowe, provided excavation services for the closure. VT DEC UST closure forms and photographs of the closure activities are attached. A signed copy of the UST closure form will be forwarded to you under a separate cover letter.

The site is located on Vermont Route 108 (also known as Mountain Road), approximately 0.6 miles northwest of the Village of Stowe, Vermont. The property is occupied by a motel/resort including 92 guest rooms, a health spa and restaurant. The former heating-oil UST was situated approximately 15 feet west of the St. Moritz and Matterhorn Suites (see attached site sketch).

The West Branch, located approximately 1,100 feet north of the Resort, flows to the east. The site and all nearby buildings are served by the village drinking-water and wastewater disposal systems. The presumed direction of ground-water flow at the site is toward the northeast. The nearest off-site supply well is located approximately 1,500 feet southeast of the Resort, in the presumed upgradient direction. The nearest building in the presumed downgradient direction receives drinking water from village system.

UST and Piping Observations

The removed UST was initially believed to be a 2,000-gallon tank; after unearthing the top of the tank it was determined that the tank actually had a 3,000-gallon capacity. The 3,000-gallon in-service, registered, single-walled, steel heating-oil UST was believed to be greater than 30 years old.

A 1,000-gallon double-walled steel UST was installed immediately following the removal of the 3,000-gallon tank on 13 November 1996.

The fill pipe, located at the northern end of the tank, was not equipped with spill containment and was sticking up about three feet above ground surface.

Prior to excavation, approximately 600 gallons of virgin heating-oil was removed from the tank. The top of the tank was located about four feet below grade and the UST excavation was approximately 12 feet wide, 25 feet long, and 10 feet deep.

The 3,000-gallon heating-oil UST was found to be in very poor condition upon removal, with several holes and significant pitting. The holes ranged in size from less than an 1/8 inch to over one-half inch in diameter.

The piping leading from the tank to the boiler room was stained with petroleum, suggesting that leaks may have occurred at the piping joints.

Environmental Observations

Soils in the upper five feet of the UST excavation consisted of brown coarse-to-medium sand and gravel. Gray silt and very fine sand were encountered between five and ten feet below ground surface (bgs), which was the maximum depth of the excavation. Soils from beneath the tank and adjacent to its southern end exhibited a slight petroleum sheen with a strong petroleum odor; however, no free product was observed. Ground water was not observed in the UST excavation.

Soils in the vicinity of the USTs were screened for the presence of volatile organic compounds (VOCs) with an HNu (Model PI 101) portable photoionization detector (PID). The PID was calibrated with isobutylene gas to a benzene reference. Soil samples were placed in Ziploc bags, which were then sealed and agitated. Bag headspace was then screened for the presence of VOCs with the PID.

PID readings on soil samples collected from the UST excavation ranged from 0.1 to over 100 parts per million (ppm). The PID readings on soils from the upper four feet, generally above the top of the tank, were less than 0.1 ppm. The PID readings on soils from immediately around the 3,000-gallon tank were between 4 and 120 ppm, with the highest concentrations at about 8.5 feet bgs. VOC concentrations averaged approximately 31 ppm in the UST excavation. A summary of the PID readings is included on Table 1.

Removal of all contaminated soils was not considered feasible, due in part to the lack of a suitable on-site location for stockpiling, so all excavated soils were backfilled. The new 1,000-gallon UST was installed at approximately the same location as the removed UST.

On the day of the tank removal, GWV also inspected lower-level rooms of the St. Moritz and Matterhorn suites and screened the ambient air inside the rooms for the possible presence of volatile petroleum compounds using a PID. No PID readings above background were detected and no petroleum odors were noted during the inspection. Other guest-rooms in the general area are located on a concrete slab foundation with no crawl space or basement.

Summary

In summary, this report describes the removal of one in-service single-walled heating-oil UST from the Golden Eagle Resort in Stowe, Vermont. The removed UST was in very poor condition at the time of removal; seven holes were identified, ranging in size from less than an 1/8 inch to over one-half inch in diameter. The observed heating-oil release appears to be due primarily to the holes located on the south end of the tank. PID readings in the excavation ranged from 0.1 to over 100 ppm. Average PID readings were approximately 31 ppm. All soils excavated from the former UST location were backfilled.

Ground water was not encountered in the excavation at the maximum depth of ten feet below grade. Petroleum sheens were observed on the soil beneath the tank and adjacent to the south end of the tank, but no free product was observed.

PID screening of the ambient air in the lower level of the nearest downgradient building, housing the St. Moritz and Matterhorn Suites, did not indicate the presence of volatile petroleum compounds at the time of the tank removal on 13 November 1996. According to Mr. Neil Van Dyke, none of the guests or Golden Eagle Resort personnel have reported the presence of petroleum odors in the rooms closest to the former UST.

Please call me if you have any questions or concerns about this work.

Sincerely,



Robert J. Ross, CGWP
Hydrogeologist

cc. Mr. Neil Van Dyke, Golden Eagle Resort
Mr. Art Meade, Sweet and Burt

Attachments

REF: 96094R01.DOC

TABLE 1
PID Soil Screening Data
Golden Eagle Resort
Stowe, Vermont

Sample ID	Location	Depth (feet, bgs)	PID Reading (ppm)
SS-1	two feet from fill pipe, top of tank	1	0.0
SS-2	adjacent to fill pipe	0.5	0.0
SS-3	over central portion of tank	2	0.0
SS-4	over central portion of tank	4	0.0
SS-5	base of fill pipe over tank	4	0.1
SS-6	west side of tank near fill pipe	5	0.1
SS-7	southwest corner of tank	5	0.8
SS-8	west side bottom of tank	6	55
SS-9	bottom, southwest corner	6	25
SS-10	south end, west side of tank	6	10
SS-11	top of tank at south end near feed line	3.5	4
SS-12	south end of tank	4	1.5
SS-13	south end of tank	5	65
SS-14	south end of tank	7	80
SS-15	south end of tank	8	70
SS-16	south end of tank	8.5	120
SS-17	south end of tank	9	100
Average PID Reading			31

All readings obtained during the UST removal on 13 November 1996.
 Photoionization detector (PID) readings obtained with an HNu Systems
 (Model PI 101) PID equipped with a 10.2 eV lamp.
 ppm = parts per million.

SOIL BORING LOG

WAGNER, HEINDEL & NOYES, INC.
P.O. BOX 64709
BURLINGTON, VT 05406-4709

Project: Golden Eagle Resort
Stowe, VT

Boring Number: MW-1
Sheet 1 of 2
Project Number: _____

Boring Company: M.W. Soils Engineering Inc.
Foreman: M.H. M.C.
W&N Staff: A. Hawk

Boring Location: MW-1
Ground Elevation: _____
Date Started: _____ Date Ended: _____

Size: 4 1/4" Casing Type: SS 1 1/2" Other: _____
Hammer: _____ Sampler: 140 #
Fall: 30"

Groundwater Readings
Date Depth Casing Stabl. Time

4/15/97 15' 7"

Sample					Sample Description	Strata Change & General Description	Field Testing (PID)	Equipment or Well Installed
WT Depth	No.	Rec.	Depth	Blows				
	1		5-7'	5,7,8,9	Brown / Grey, Fine Sandy silt; silty sands moist		.6	
	2		7-9'	8,9,8,8	Brown Fine Sands with Little silt; increasing sand content		.6	
	3		9-11'	7,8,5,5	Brown / Grey Fine silt, sand, wet Petro. odor		1500	
	4		11-12'		Brown / Grey Fine Silty Sands wet Petro. odor		720	
	5		12-13'	6,7,7,9	Brown Coarse Gravelly Sand, Petro. odor, Moist to dry		1400	
	6		13-14.5'		Brown Coarse Gravelly Sand Petro. odor, Dry		320	
	7		14.5-15'	7,8,6,7	Brown Fine Silty Sand, Silty, Moist NO odor.		3.8	
	8		15-16.5'		Brown Medium Sand w/ Petro. odor, Dry		32.0	
	9		16.5-17'	8,7,6,6	Brown fine Silty Sand Silty and moist NO odor.		3.0	
	10		17-19'	23,3,4	Brown very fine sands and silt, wet, loose, sticky, sand laminae. NO odor		.8	
	11		19-20'		Brown fine sand (silt), wet and loose. NO odor.		.4	
	12		20-21'	8,9,13,17	Coarse gravelly Sand Petro. odor.		.4	

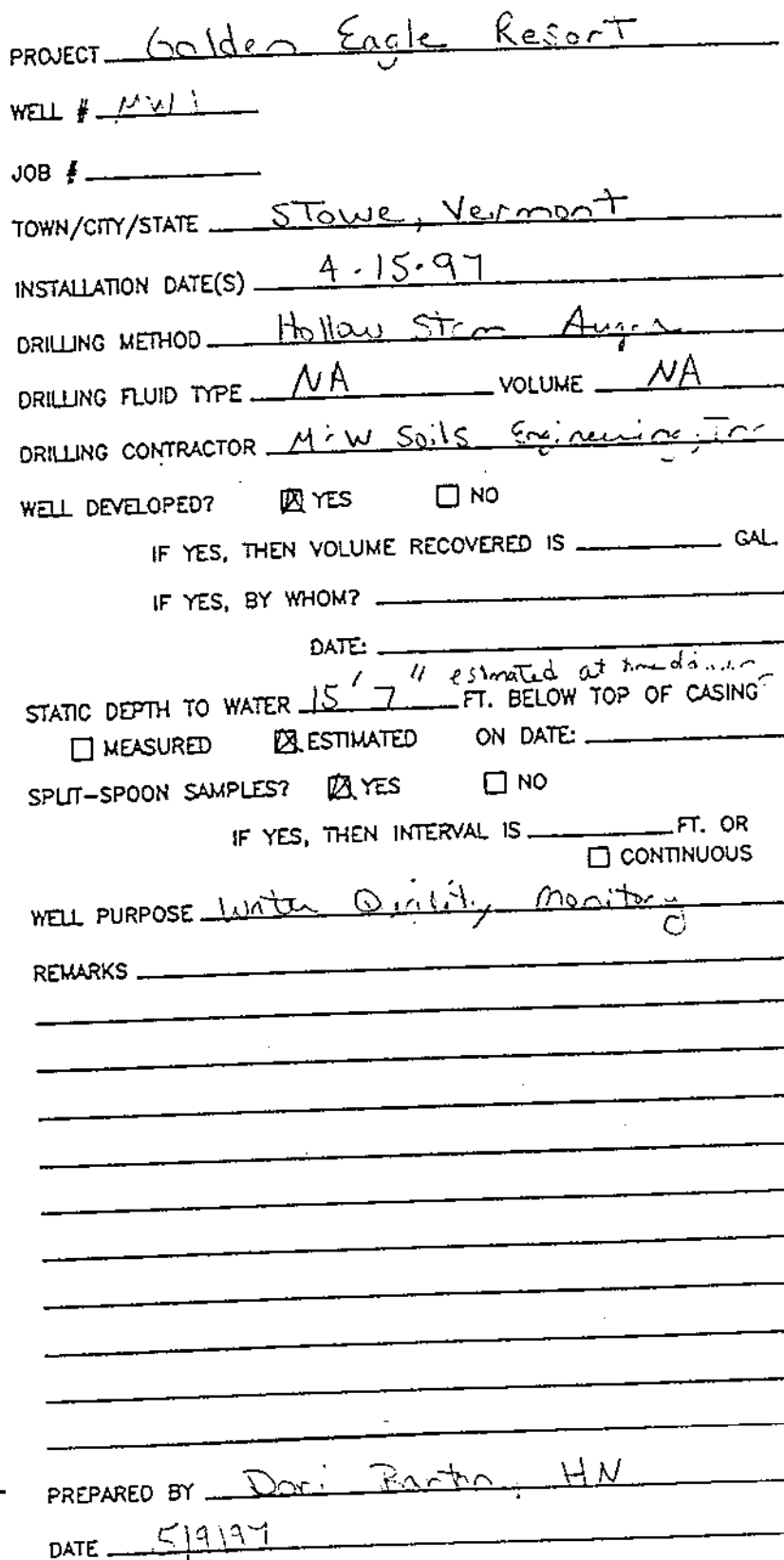
Proportions Used
Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance
140lb wt falling 30" on 2" O.D. Sampler
Cohesionless Density
0-4 Very Loose
5-9 Loose
10-29 Mod. Dense
30-49 Dense
50+ Very Dense
Cohesive Consistency
0-2 Very Soft
3-4 Soft
5-8 M/Stiff
9-15 Stiff
16-30 Very Stiff
31+ Hard

Well Construction Legend
Concrete
Grout
Backfill
Bentonite
Silica Sand
Bedrock

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT



SOIL BORING LOG

WAGNER, HEINDEL & NOYES, INC.
P.O. BOX 64709
BURLINGTON, VT 05406-4709

Project: Golden Eagle Project
Stowe VT

Boring Number: MW 2
Sheet _____ of _____
Project Number: _____

Engineering Company: M. W. Soils Engineering, Inc.
 Element: MH MC
 I&N Staff: Andrew Hawk

Boring Location: MW-2
Ground Elevation: _____
Date Started: _____

Date Ended:

e: 174" Type: SS Sampler 172" Other: _____
 Hammer: 110#
 Fall: 30"

Date	Groundwater Readings Depth	Casing	Statl. Time
4-15-97	5' 7"		

Sample

Sample Description

State	Change & General Description
Alabama	
Alaska	
Arizona	
Arkansas	
California	
Colorado	
Connecticut	
Delaware	
District of Columbia	
Florida	
Georgia	
Hawaii	
Idaho	
Illinois	
Indiana	
Iowa	
Kansas	
Kentucky	
Louisiana	
Maine	
Maryland	
Massachusetts	
Michigan	
Minnesota	
Mississippi	
Missouri	
Montana	
Nebraska	
Nevada	
New Hampshire	
New Jersey	
New Mexico	
New York	
North Carolina	
North Dakota	
Oklahoma	
Oregon	
Pennsylvania	
Rhode Island	
South Carolina	
South Dakota	
Tennessee	
Texas	
Vermont	
Virginia	
Washington	
West Virginia	
Wisconsin	
Wyoming	

Field
Testing
(PID)

Equipment or Well
Installed

WT
Depth

No.

Rec.

Depth

Blows

Sample Description

[illegible]

Field
Testing
(PID)

Equipment or Well
Installed

Proportions Used
Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance	
140lb wt falling 30" on 2" O.D. Sampler	
Cohesionless Density	Cohesive Consistency
0-4 Very Loose	0-2 Very Soft
5-9 Loose	3-4 Soft
10-29 Med. Dense	5-8 M/Stiff
30-49 Dense	9-15 Stiff
50+ Very Dense	16-30 Very Stiff
	31+ Hard

Well Construction Legend

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT

with box

☒ LOCKING WELL CAP

FT. 0

☒ CAP

GROUND SURFACE

Flush mount

SURFACE SEAL:

☒ CEMENT

☐ BENTONITE

☐ CUTTINGS

FT.

DRILLED HOLE DIA. 9 IN.

WELL CASING DIA. 2 IN.

MAT'L PVC

CASING JOINTS:

☐ NONE

☒ FLUSH-THREADED

☐ SOLVENT-WELDED

☐ OTHER:

BACKFILL:

☐ GROUT

☒ CUTTINGS

BENTONITE:

☐ SLURRY

☒ PELLETS

WATER LEVEL:

TOP OF WELL SCREEN:

3'7" FT. ☒ ABOVE

☐ BELOW

WATER TABLE

WELL SCREEN:

MAT'L PVC

SLOT 0.010 IN.

LENGTH 10 FT.

SOCK: ☒ YES

☐ NO

☐ GRAVEL PACK

☐ SAND PACK

☒ FORMATION COLLAPSE

SUMP: ☐ YES

☒ NO

12 FT TOTAL DEPTH:

BORING DEPTH:

☒ 12 FT.

☒ 6.5 FT. BELOW WATER TABLE

☐ FT. INTO IMPEDING MATERIAL

☐ TO REFUSAL

☐ FT. INTO BEDROCK

PROJECT Golden Eagle Resort

WELL # MW 2

JOB # _____

TOWN/CITY/STATE Stowe Vermont

INSTALLATION DATE(S) 4-15-97

DRILLING METHOD Hollow Stem Auger

DRILLING FLUID TYPE NA VOLUME NA

DRILLING CONTRACTOR MW Soils Engineering, Inc.

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS _____ GAL

IF YES, BY WHOM? _____

DATE: _____

STATIC DEPTH TO WATER 5'7" on time of drilling FT. BELOW TOP OF CASING

☐ MEASURED ☒ ESTIMATED ON DATE: 4-15-97

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR ☐ CONTINUOUS

WELL PURPOSE Water Quality Monitoring

REMARKS _____

PREPARED BY Don Barber HN

DATE 5/9/97

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT

Curb Box
☒ LOCKING WELL
CLEAN

FT. 0

GROUND SURFACE

FT.

Surfmount

SURFACE SEAL:
☒ CEMENT
☐ BENTONITE
☐ CUTTINGS

DRILLED HOLE
DIA. = 9 IN.

WELL CASING
DIA. 2 IN.
MAT'L PVC

CASING JOINTS:
☐ NONE
☒ FLUSH-THREADED
☐ SOLVENT-WELDED
☐ OTHER:

BACKFILL:
☐ GROUT
☒ CUTTINGS

BENTONITE:
☐ SLURRY
☒ PELLETS

WATER LEVEL:

TOP OF WELL SCREEN:
7' 8" FT. ☒ ABOVE
☐ BELOW
WATER TABLE

WELL SCREEN:
MAT'L PVC
SLOT 0.010 IN.
LENGTH 10 FT.

SOCK: ☒ YES
☐ NO

☐ GRAVEL PACK
☐ SAND PACK
☒ FORMATION COLLAPSE

SUMP: ☐ YES
☒ NO

15' TOTAL DEPTH:

BORING DEPTH:
☒ 15 FT.
☒ 2' 4" FT.
BELOW WATER
TABLE

☐ FT. INTO
IMPEDING MATERIAL
☐ TO REFUSAL
☐ FT. INTO
BEDROCK

PROJECT Golden Eagle Resort

WELL # MW3

JOB # _____

TOWN/CITY/STATE Stowe, Vermont

INSTALLATION DATE(S) 4-15-97

DRILLING METHOD Hollow Stem Auger

DRILLING FLUID TYPE NA VOLUME NA

DRILLING CONTRACTOR M.W. Sales Engineering, Inc.

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS _____ GAL

IF YES, BY WHOM? _____

DATE: _____

STATIC DEPTH TO WATER 12' 8" at time of drilling FT. BELOW TOP OF CASING

☐ MEASURED ☒ ESTIMATED IN DATE: _____

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR
☐ CONTINUOUS

WELL PURPOSE Water Quality Monitoring

REMARKS _____

PREPARED BY Doc Barton HW

DATE 5/01/97

1.

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT

FT. 0

GROUND SURFACE

FT.

CASING JOINTS:

☐ NONE

☒ FLUSH-THREADED

☐ SOLVENT-WELDED

☐ OTHER:

TOP OF WELL SCREEN:

7 FT. ☒ ABOVE

☐ BELOW

WATER TABLE

20' TOTAL DEPTH:

20' BORING DEPTH:

☒ 20 FT.

☒ 3 FT.

BELOW WATER TABLE

☐ FT. INTO IMPEDING MATERIAL

☐ TO REFUSAL

☐ FT. INTO BEDROCK

Curb Box

☒ LOCKING WELL GUARD

☒ CAP

Flushment

SURFACE SEAL:

☒ CEMENT

☐ BENTONITE

☐ CUTTINGS

DRILLED HOLE DIA. 9 IN.

WELL CASING DIA. 2 IN.

MAT'L PVC

BACKFILL:

☐ GROUT

☒ CUTTINGS

BENTONITE:

☐ SLURRY

☒ PELLETS

WATER LEVEL:

WELL SCREEN:

MAT'L PVC

SLOT 0.010 IN.

LENGTH 10 FT.

SOCK: ☒ YES

☐ NO

☐ GRAVEL PACK

☐ SAND PACK

☒ FORMATION COLLAPSE

SUMP: ☐ YES

☒ NO

PROJECT Golden Eagle Resort

WELL # MW 4

JOB # _____

TOWN/CITY/STATE Stowe, Vermont

INSTALLATION DATE(S) 4-15-97

DRILLING METHOD Hollow Stem Auger

DRILLING FLUID TYPE NA VOLUME NA

DRILLING CONTRACTOR M.W. Sols Engineering, Inc

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS _____ GAL

IF YES, BY WHOM? _____

DATE: _____

STATIC DEPTH TO WATER 17 ^{at time of drilling} FT. BELOW TOP OF CASING

☐ MEASURED ☒ ESTIMATED ON DATE: _____

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR

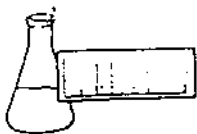
☐ CONTINUOUS

WELL PURPOSE Water Quality Monitoring

REMARKS _____

PREPARED BY Don Barton HW

DATE 5/9/97



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel and Noyes
PROJECT NAME: Golden Eagle Resort
REPORT DATE: April 22, 1997
DATE SAMPLED: April 15, 1997

PROJECT CODE: HNGE1786
REF.#: 102,198 - 102,201

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with NaN_3 .

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

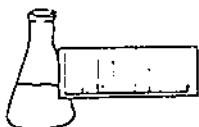
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Heindel and Noyes

PROJECT NAME: Golden Eagle Resort

CLIENT PROJ. #: NI

DATE RECEIVED: April 17, 1997

REPORT DATE: April 22, 1997

PROJECT CODE: HNGE1786

Ref. #:	102,198	102,199	102,200	102,201	
Site:	MW-1	MW-2	MW-3	MW-4	
Date Sampled:	4/15/97	4/15/97	4/15/97	4/15/97	
Time Sampled:	4:50	4:40	4:30	4:20	
Sampler:	A. Hoak	A. Hoak	A. Hoak	A. Hoak	
Date Analyzed:	4/18/97	4/18/97	4/21/97	4/18/97	
UIP Count:	>10	0	0	0	
Dil. Factor (%):	100	100	20	100	
Surr % Rec. (%):	92	95	100	93	
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	
Benzene	13.9	<1	<5	<1	
Chlorobenzene	<1	<1	<5	<1	
1,2-Dichlorobenzene	<1	<1	<5	<1	
1,3-Dichlorobenzene	<1	<1	<5	<1	
1,4-Dichlorobenzene	<1	<1	<5	<1	
Ethylbenzene	23.0	<1	<5	<1	
Toluene	29.1	<1	<5	<1	
Xylenes	103.	<1	<5	<1	
MTBE	<10	<10	<50	<10	

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

17NGE 1787

20142

CHAIN-OF-CUSTODY RECORD

Project Name: GOLDEN EAGLE RESORT	Reporting Address: H&N	Billing Address: H&N
Site Location: STOWE, VT	Company: H&N	Sampler Name: A-Hoag
Endyne Project Number: HNGE 1786	Contact Name/Phone #: J. Niles 658-0820	Phone #: 658-0820

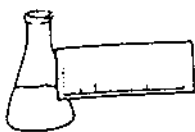
[illegible]

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time 4/17/97
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

New York State Project: Yes _____ No _____ Requested Analyses _____

New York State Project: Yes _____ No _____				Requested Analyses							
1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 D/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 D/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel and Noyes
PROJECT NAME: Golden Eagle Resort
DATE REPORTED: April 25, 1997
DATE SAMPLED: April 15, 1997

PROJECT CODE: HNGE1787
REF. #: 102,202 - 102,205

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preserved with azide.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

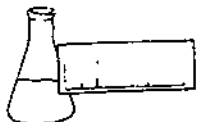
Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: April 25, 1997
CLIENT: Heindel and Noyes
PROJECT: Golden Eagle Resort
PROJECT CODE: HNGE1787
COLLECTED BY: A. Hoak
DATE SAMPLED: April 15, 1997
DATE RECEIVED: April 17, 1997

Reference #	Sample ID	Concentration (mg/L) ¹
102,202	MW-1; 4:50	6.70
102,203	MW-2; 4:40	1.46
102,204	MW-3; 4:30	2.80
102,205	MW-4; 4:20	ND ²

Notes:

- 1 Method detection limit is 0.8 mg/L.
- 2 None detected



CHAIN-OF-CUSTODY RECORD

Project Name:		Reporting Address:		Billing Address:	
GOLDEN EAGLE RESORT		HEN		HEN	
Site Location: STOWE, VT		Company: HEN		Sampler Name: A-HOAC	
Endlyne Project Number: HNGE1787		Contact Name/Phone #: J. NOTES 658-0820		Phone #: 658-0820	
Sample Containers		Sample Containers		Sample Containers	
Remarks		Remarks		Remarks	
Analysis Required		Analysis Required		Analysis Required	
Sample Preservation		Sample Preservation		Sample Preservation	
Rush		Rush		Rush	

[illegible]

Received by: Signature

Date/time

Relinquished by: Signature

Received by: Signature

Date/Time

New York State Project: Yes _____ No _____

Requested Analyses

New York State Project: Yes _____ No _____				Requested Analyses							
1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										